

Multi-Wavelength Study of the Remarkable
"Taffy" Galaxy Pair UGC 12914/5

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ABSTRACT

We are conducting a multi-wavelength study of the nearby interacting spiral galaxy system, UGC 12914/12915, using ground-based near infrared and radio observations, and mid-infrared imaging and spectral observations using ISOCAM and Phot-S on the Infrared Space Observatory (ISO). The interacting system (also known as VV 254), consisting of two counter-rotating spirals having suffered a nearly face-on collision, exhibits a prominent 1.4 GHz radio "bridge" connecting the two galaxies. The collision has stripped H I gas from the galaxies leaving a trail in the post-collision trajectory, while the magnetic fields appear to remain intact (frozen) but stretched by the interaction -- thus giving the 'radial' bridge or "taffy" appearance as seen in the radio. Optical and near-infrared imaging data do not trace the gas bridge. Warm/hot dust in the bridge is, however, detected with our ISOCAM data using the LW1, LW2, LW8 and LW3 filters, extending 4 to 17 microns. Emission features at 7.7 and 11.3 microns (aromatic hydrocarbon) are seen in both the mid-IR imaging and Phot-S spectro-photometry centered on the galaxies and connecting bridge. Our data are consistent with the hypothesis that this uncommon type of interaction (counter-rotating head-on collision) has produced a "ring" of recent star-formation and gas "bar" structures near the respective nuclei. For the interacting pair and bridge, we will present imaging data spanning optical, near-infrared, mid-infrared, and radio continuum, and spectroscopy covering 3 to 15 microns.

Subject headings: Galaxies: Individual (UGC 12914/12915) -- Galaxies: ISM --
Infrared: Galaxies -- Galaxies: Interacting